$$m = \frac{\Delta y}{\Delta x}$$

$$= \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{-5 - 3}{6 - 2}$$

$$= \frac{-8}{4}$$

$$m = -2$$

Ex

Δ change in

$(2, 3), (6, -5)$

$$m = \frac{3 - (-5)}{2 - 6}$$

$$= \frac{8}{-4}$$

$$m = -2$$

$y = \frac{1}{3}x + 2$ $\qquad$ $y = 3x + 2$

y-int $(0, 2)$ $\qquad$ $(0, 2)$

$m = \frac{1}{3}$ $\qquad$ $m = 3$

$y = mx + b$

y-int $(0, b)$

m = slope

call this the

Slope intercept form of the equations of a line

$ax + by = c$ $\qquad$ standard form

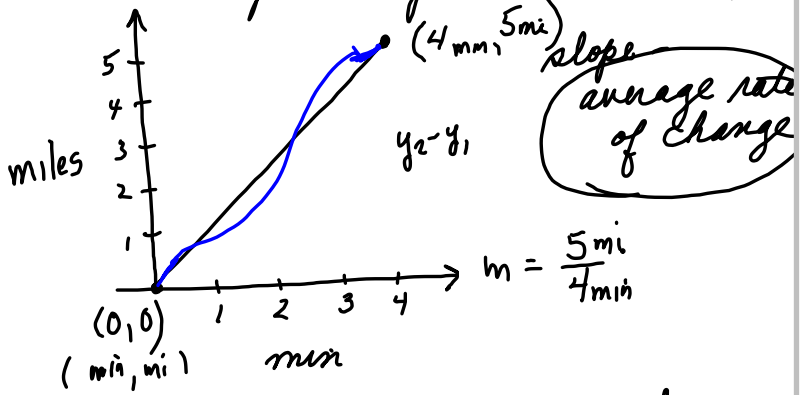
Use of slope

The speed limit is 60 $\frac{mi}{hr}$

A motorist clocked at point A at 55 mi/hr ☺

4 minutes later he is clocked at 50 mi/hr – 5 miles down the road.

He is stopped and given a speeding ticket. Why?

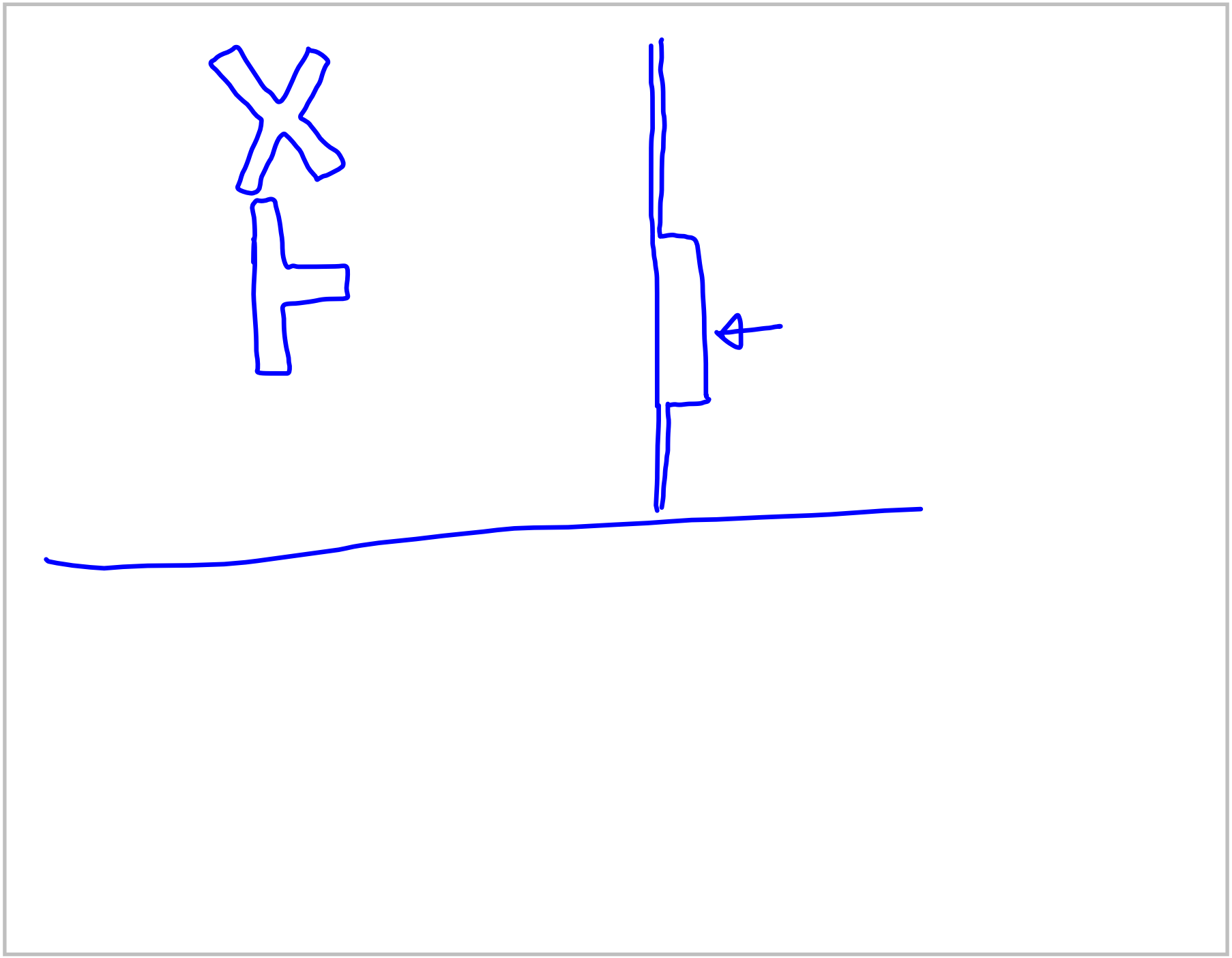


$$\left(4\,\frac{min}{}\right)\left(\frac{1\,hr}{60\,min}\right) = \frac{1}{15}\,hr.$$

$$m = \frac{5\,mi}{\frac{1}{15}\,hr} \qquad \frac{\frac{5}{1}}{\frac{1}{15}} = \frac{5}{1}\left(\frac{15}{1}\right)$$

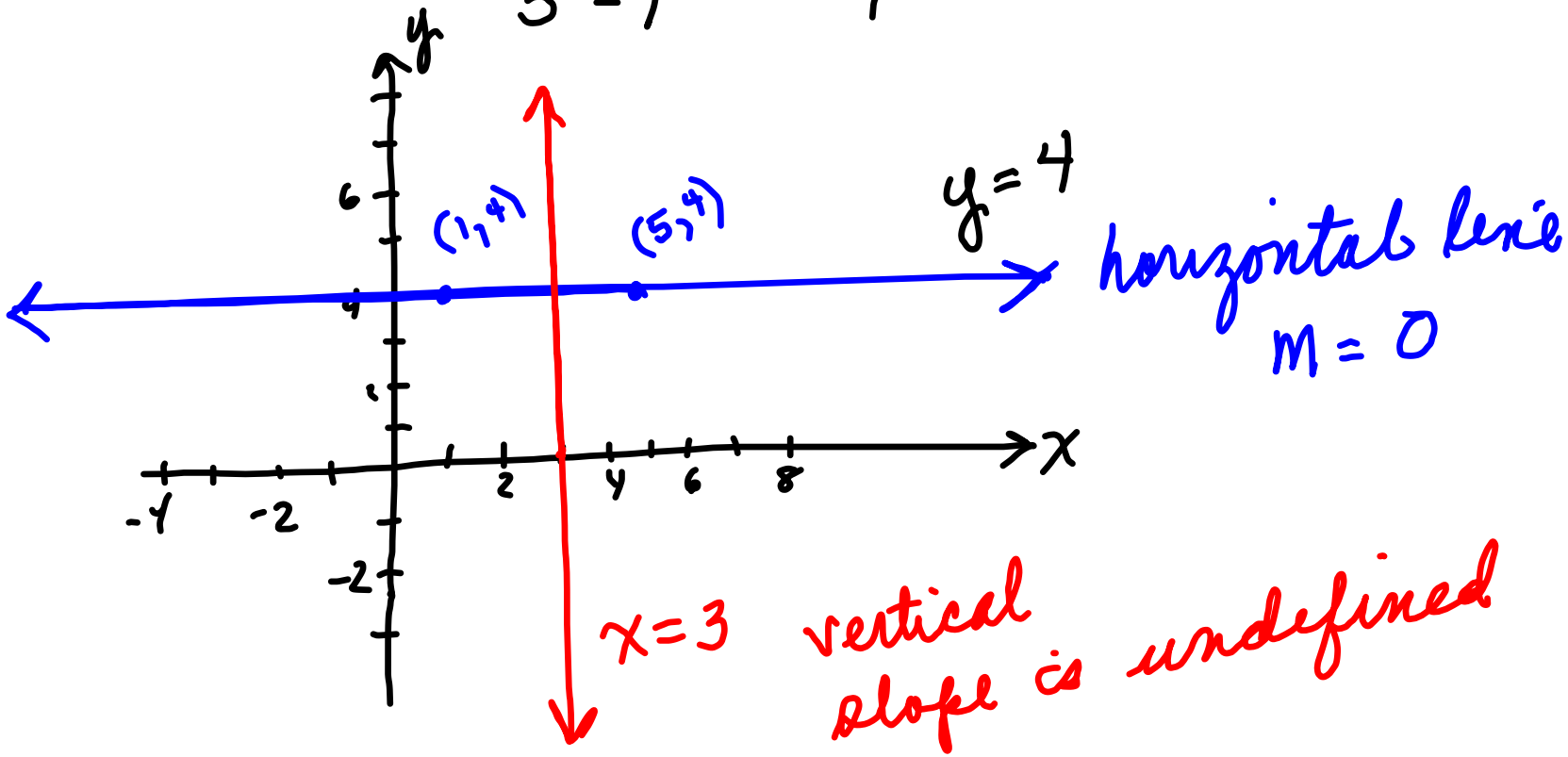
$$= 5\left(\frac{15}{1}\right)\frac{mi}{hr.}$$

$$= 75\ mi/hr.$$



Find the slope of the line containing (1, 4) and (5, 4)

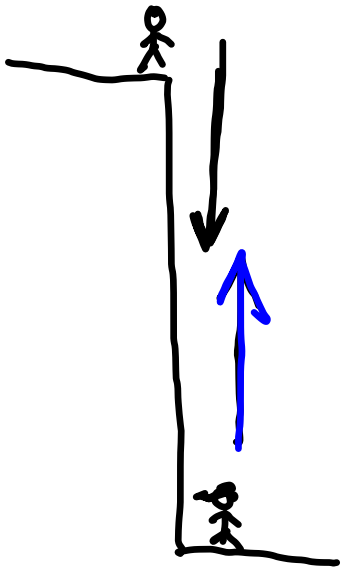
$$m = \frac{4-4}{5-1} = \frac{0}{-4} = 0$$



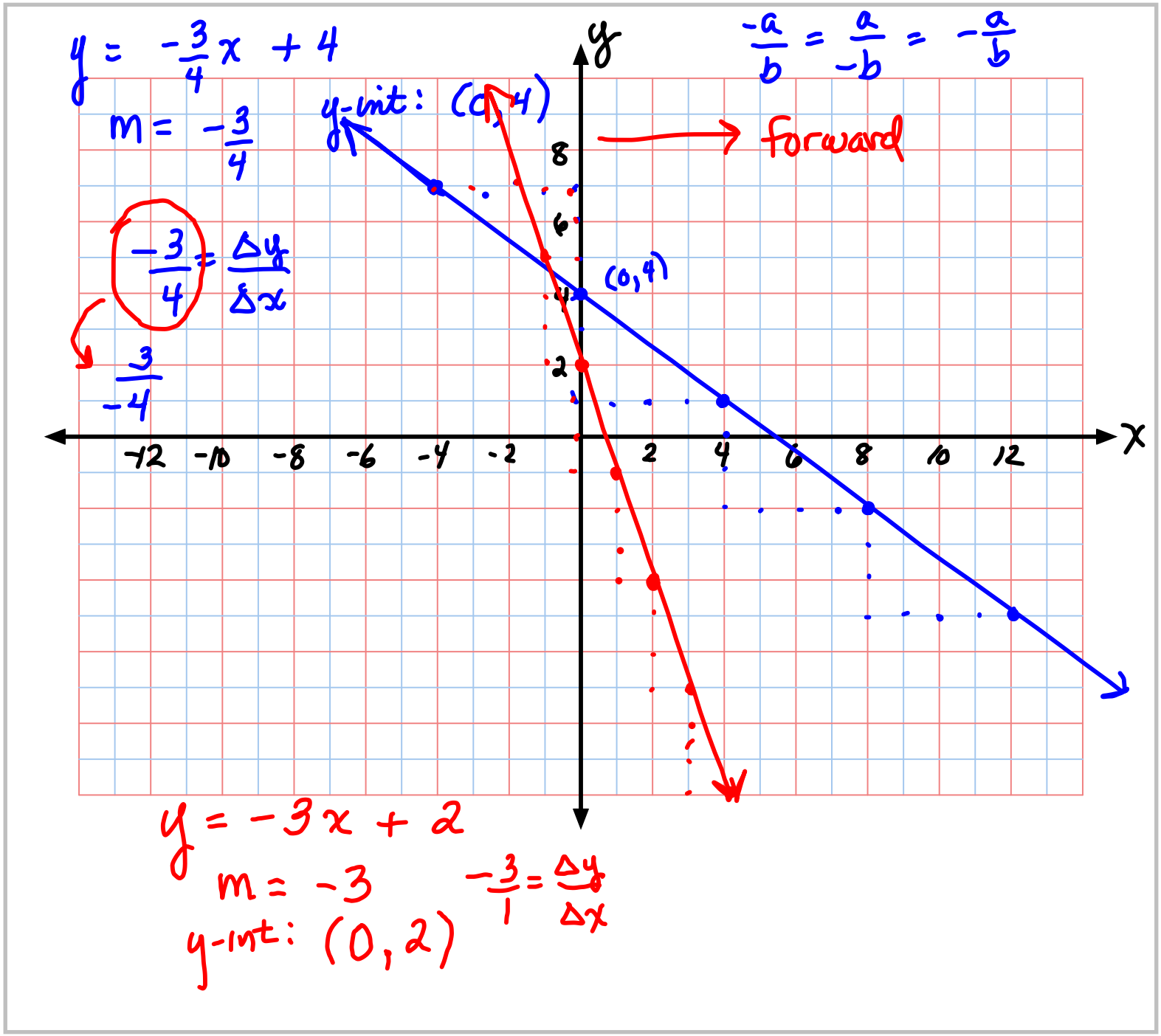
④ $(3, -6)$, $(3, 2)$

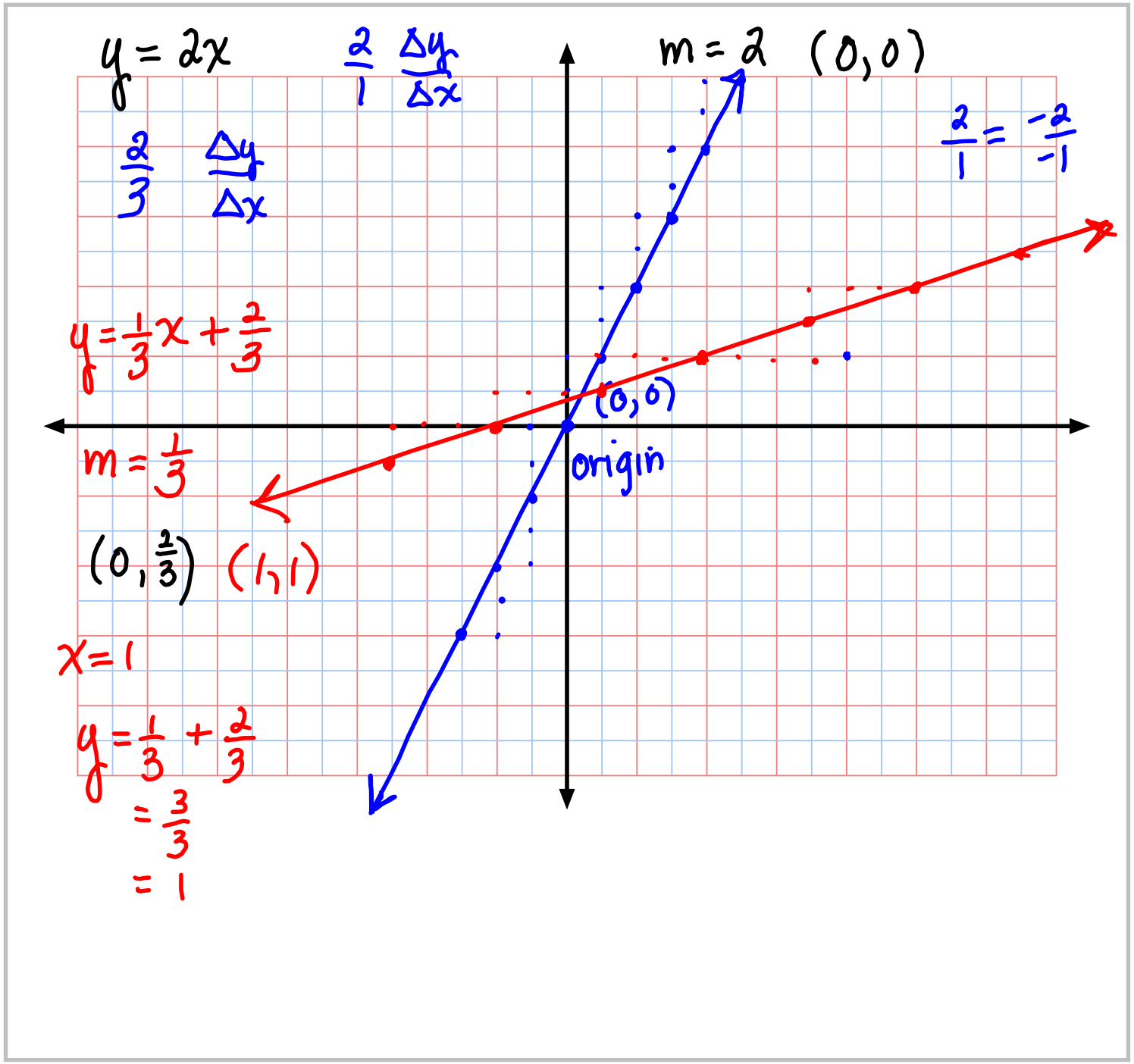
$$m = \frac{-6-2}{3-3} = \frac{-8}{0}$$ oops

undefined



∴ undefined


$y = -\frac{3}{4}x + 4$
$m = -\frac{3}{4}$
y-int: (0, 4)
$\frac{-a}{b} = \frac{a}{-b} = -\frac{a}{b}$
forward
$-\frac{3}{4} = \frac{\Delta y}{\Delta x}$
$\frac{3}{-4}$
(0,4)
y
x
8
6
4
2
-12 -10 -8 -6 -4 -2 2 4 6 8 10 12
$y = -3x + 2$
$m = -3$
y-int: (0, 2)
$-\frac{3}{1} = \frac{\Delta y}{\Delta x}$


y = 2x
2/1 Δy/Δx
m = 2 (0,0)
2/1 = -2/-1
2/3 Δy/Δx
y = 1/3 x + 2/3
(0,0)
origin
m = 1/3
(0, 2/3) (1,1)
x = 1
y = 1/3 + 2/3
= 3/3
= 1